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ABSTRACT

The second of the Pew Symposia in Learning and Technology, whose purpose is to conduct an ongoing national conversation about issues related to the intersection of learning and technology, focused on policy issues related to the development and ownership of online courses and course materials. This paper builds on the work of participants, and captures the discussion and general conclusions. First presented as adaptations are each of the four cases examined at the Symposium to raise awareness of the issues and to stimulate discussion. The Arthur Miller case and the Unext.com case represent two sides of the same issue: the transfer of intellectual property from individual faculty members to organizations other than the home institution. The CaseNET case and the Math Emporium case represent two approaches to the commercialization of technology-mediated materials and methodologies. Following these cases, the paper discusses the context of online courses and course materials, and examines the two scenarios that are contributing to the state of anxiety in higher education. Discussion then moves to the law and why there is a lack of clarity when it comes to ownership of course materials. The paper concludes by exploring what kind of policy is needed. (AEF)

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THE PEW LEARNING AND TECHNOLOGY PROGRAM

Who Owns Online Courses and Course Materials?

Intellectual Property Policies for a New Learning Environment

BY CAROL A. TWIGG

U.S. DEPARTMENT OF EDUCATION
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by Carol A. Twigg
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Preface

On February 17–18, 2000, a group of fourteen higher education leaders gathered at the Biltmore Hotel in Miami, Florida, to participate in an invitational symposium. The topic was "Who Owns Online Courses and Course Materials? Intellectual Property Policies for a New Learning Environment." This was the second of the recently created Pew Symposia in Learning and Technology, whose purpose is to conduct an ongoing national conversation about issues related to the intersection of learning and technology.

The participants in the Biltmore symposium fell into four categories: (1) recognized experts on the topic of intellectual property; (2) those who are actively engaged in developing and implementing online programs and who are grappling with intellectual property issues on a daily basis; (3) people who approach the issue from a corporate perspective and who collaborate with both individuals and institutions; and (4) noted higher education thinkers on the topic of technology-mediated programs. By blending those familiar with the current policy and legal situation related to ownership issues with those struggling to delineate the practical implications, we hoped to arrive at a point of understanding that would have a positive impact on both theory and practice.

By design, we excluded several aspects of the copyright issue because other communities, especially the library community, are addressing them (e.g., fair use in distance learning environments). We focused on a particular area: the development and ownership of online courses and course materials. We also concentrated on credit-bearing courses rather than noncredit courses, training courses, self-study courses, and so on. Finally, we centered our attention primarily on full-time faculty and their engagement in developing courses and course materials rather than on adjuncts, who are usually hired by an institution to accomplish specific instructional tasks.

For centuries, there has never been much need to figure out if one party owned a course as a commodity that could be sold elsewhere. But information technology and the Internet appear to have changed the status quo.

Why is this issue such a hot topic? For centuries, there has never been much need to figure out if one party owned a course as a commodity that could be sold elsewhere. But information technology and the Internet appear to have changed the status quo. The process of committing to writing the course content (e.g., lectures, exercises) and digitizing course materials makes it possible, if not potentially lucrative, to package courses in such a way that they can become mobile and can be delivered by people other than the original author. Courses have become "commoditized" and sought as commercial products by online distance learning companies, for-profit universities, and publishers. Thus, both institutions and faculty authors are encountering new, different opportunities.

Our goal in Miami was to examine the validity of these ideas. Among the questions considered at the symposium were the following: What is really driving the ownership discussion? What is the likelihood that faculty-developed courseware will produce substantial revenue? Can college-level courses be offered with no human interaction or intervention? Should colleges and universities make money, alone or in partnership with the private sector? To what degree should institutions seek to control the behavior of faculty members outside of their institutional commitment? How can the current climate of distrust and uncertainty be alleviated? How can policy encourage faculty members to be engaged in online learning, to develop interesting applications and courses, for the benefit of students?

Most published articles on this topic conclude with something like the following. "The real need is for an institution to have a clear statement of its policy and a mechanism to ensure that the issue of ownership is addressed as early as possible in the development process." Yet simply declaring that an institution needs a clear policy, while such a statement may be true, is not especially helpful. Institutions are having a great deal of difficulty trying to decide what their policy should be, and their inability to decide is disruptive to the internal fabric of the institution. Most colleges

and universities have very little understanding of these issues. Since higher education institutions are large, highly diffused organizations, they frequently have no centralized way to focus attention on how to address these issues. Instead, policy is being debated unit by unit. Even when an institution-wide policy exists, in many instances there is no strong conformity to it. Our explicit goal in Miami was to produce a paper that would go beyond recommending that institutions have a policy and would give institutions some concrete advice about what that policy should be and why.

At the symposium, participants discussed four cases, each chosen to raise awareness of the issues and to stimulate discussion. The cases are included here to provoke the reader's thinking as well. The Arthur Miller case and the UNext.com case represent two sides of the same issue: the transfer of intellectual property from individual faculty members to organizations other than the home institution. In the former, the faculty member is the decision-maker and meets resistance from his university. In the latter, the university is the decision-maker and meets resistance from the faculty. The CaseNET case and the Math Emporium case represent two approaches to the commercialization of technology-mediated materials and methodologies. In the first, entrepreneurial faculty members take the initiative without institutional sanction. In the second, the institution has the potential to expand an innovative approach to teaching and learning beyond its own boundaries, but the question remains: how should this be done?

This paper, like the discussion in Miami, builds on the good work of the individuals who participated, both virtually and in real-time, in the symposium. Before our meeting, a number of them submitted written answers to a series of questions, and their responses, elaborated by the discussion, have been included in this paper. Although not every participant will agree with every statement in this paper, both the discussion and our general conclusions have been captured.

The goal of the Pew Symposia is to approach topics related to learning and technology from a public-interest perspective. Many constituencies bring self-interested agendas to discussions about technology: administrators worry about facing competitors; faculty worry about keeping jobs; vendors worry about selling particular hardware and software. Our goal is to produce thoughtful analyses and discussions that serve the larger good. Please let us know if we have met that goal in our approach to this very contentious issue.

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case 1

Professors as Rock Stars
The Arthur Miller Case

Adapted from two articles in the Chronicle of Higher Education: *Wendy R. Leibowitz, "Law Professors Told to Expect Competition from Virtual Learning," January 21, 2000, and Dan Carnevale and Jeffrey R. Young, "Who Owns Online Courses? Colleges and Professors Start to Sort It Out," December 17, 1999.*

In what he calls the "Hollywoodization of academia," Arthur Levine, president of Teachers College of Columbia University, envisions professors following in the footsteps of the late Cornell University astronomer Carl Sagan, who talked about physics and space on television so often—and so distinctively—that his presentations became the punch lines of Johnny Carson's jokes on *The Tonight Show*. In the future, Levine predicts, faculty members whose online courses become popular will end up sitting across the desk from Jay Leno.

Harvard officials say Miller violated university policy by providing course material to another law school without permission. Miller and Concord officials maintain that because he doesn't teach at the virtual law school or even interact with its students, in person or online, Miller is not violating Harvard's policies.

In such an approach, a faculty member would own the rights to online instructional materials and could sell access to various online colleges. In fact, the day when professors make deals like rock stars and athletes may not be that far off. Top professors might soon sell materials to a variety of colleges—and might even hire agents to arrange television appearances and other promotions to drum up business. "There's talent that can be making more money than they currently are," Levine says. "I'm waiting for the first academic agent." He says the best professors will become something like free agents in a major sports league, able to work with whomever they choose. Except, unlike athletes, those professors will be able to play on more than one college team at once.

The Internet is creating new opportunities for institutions as well as faculty members at those institutions, according to A. Michael Froomkin, a professor at the University of Miami School of Law. "Law school is a product," says Froomkin, and new markets are presenting themselves. Although it is costly to create virtual lectures and seminars, the potential revenues from reaching out to new student markets, including corporate executives, government officials, and foreigners, could be tantalizing to law schools, according to Froomkin.

Celebrity faculty members may find new markets for their courses and reap the benefits, financially and professionally. Froomkin calls this the Arthur-Miller-on-a-disk model, referring to the Harvard University law professor who has already supplied videotaped lectures for Concord University School of Law, an online institution.

Harvard officials say Miller violated university policy by providing course material to another law school without permission. Miller and Concord officials maintain that because he doesn't teach at the virtual law school or even interact with its students, in person or online, Miller is not violating Harvard's policies. He says his arrangement with Concord is analogous to publishing a book or giving a lecture on television. "You name the medium, and I've conducted lectures through them," he says. Miller and Robert C. Clark, Harvard law school's dean, are now discussing how to handle the disagreement. They're also reviewing how Harvard's policy applies in the age of the Internet.

Jack R. Goetz, the law dean at Concord, says colleges and universities will have to loosen restrictions on their professors if they want to hang on to the best ones in the years ahead. Restricting faculty members' ability to teach online will encourage them to leave, because they will see online

teaching as a way to build a reputation that can attract outside work, he says. Goetz notes that Miller is one of about a half-dozen professors who provide course material to Concord's law school but don't teach there. Harvard is the first institution to raise objections, he says.

Comments and Questions

Some in higher education say the issue of who owns courses and course materials is not only about money but also about how institutions protect their interests. They are concerned when, after the home institution has nourished faculty to become good faculty, competing institutions hire the faculty as adjuncts and benefit from that nurturing without sharing the cost. This issue is categorized as one of conflict of commitment. Institutions care about the faculty member who has taken advantage of the college or university's resources and simultaneously uses them at a competing institution. Clearly the new environment allows the faculty member to do such things far more easily. The ownership issue represents an attempt by the college or university to try to control the faculty member's behavior.

Here are some questions to consider:

1. One basis for objecting to this practice relates to the traditional notion of conflict of commitment—that is, the notion that faculty members owe their primary time commitment to their home institution. Is this concept still viable when courses can be captured in replicable form and distributed on the Internet or via other media forms, thus negating the time-conflict argument?

2. Another reason for objecting to this practice relates to limiting competition. In this case, Miller is not competing with his own institution, since Concord appeals to a totally different market. If the faculty member is working for an institution that is not in competition with his or her home institution, should there be any restrictions on such activity?

3. It is common practice for faculty members to teach a course at other colleges, including those that are in the same geographic region and that are presumably in direct competition with the home institution. Is there anything unique about online learning that changes the way we should regard this situation?

4. Some say that since Harvard pays the overhead for Miller to produce a course by providing him with office space, heat, library, and all other resources, Harvard has a right to prevent him from selling the course to Concord, which has provided none of this overhead and intends to make a profit. Do you agree?

How will colleges and universities be able to hang on to the best professors in the years ahead if institutions restrict professors' ability to sell themselves and their courses to other providers?

5. Is there a difference between faculty who function as genuine free agents (i.e., as independent entrepreneurs not attached to any institution) and those who operate as "pseudo" free agents (i.e., still affiliated with an institution)?

6. Some believe that the issue is one of associating the Harvard name and reputation with a law school that may be viewed as less reputable. That is, some see this as a trademark problem. If Miller were doing the same thing with a well-regarded school, would Harvard be as unhappy? Or, conversely, what if Miller were a faculty member at a small college and invited to produce an online course at Harvard? Would that be OK?

7. If a professor truly has "star quality," can a college or university realistically expect to own a piece of the action? How will colleges and universities be able to hang on to the best professors in the years ahead if institutions restrict professors' ability to sell themselves and their courses to other providers?

8. If a college or university has traditionally allowed professors to teach at other institutions or consult with other organizations, is it justified in suddenly changing its practices when it thinks that money can be made or that the competition is serious?

case 2

It's a Huge Market
The UNext.com Case

Adapted from Goldie Blumenstyk, "A Company Pays Top Universities to Use Their Names and Their Professors," Chronicle of Higher Education, *June 18, 1999.*

A new company, called UNext.com, is offering a select group of universities a chance at Wall Street riches in return for the right to use their names and their faculty expertise for developing courses in business, engineering, and writing. The company is courting—and signing—some prestigious educational partners. Columbia University, Stanford University, the University of Chicago, and the London School of Economics and Political Science have all signed deals. UNext.com has devised a business plan that aims to tap some of the biggest growth areas in higher education today: corporate training, continuing education, distance learning, and the international-student market.

UNext.com plans to develop a series of business-oriented courses, sell them to multinational and overseas corporations, and then have the corporations deliver the courses to their employees worldwide via the Internet and more traditional materials, such as books.

Based in Deerfield, Illinois, UNext.com plans to develop a series of business-oriented courses, sell them to multinational and overseas corporations, and then have the corporations deliver the courses to their employees worldwide via the Internet and more traditional materials, such as books. The company provides universities an "opportunity to deliver education to employed people throughout the world," says Andrew M. Rosenfield, the Chicago entrepreneur who is president of UNext.com. Worldwide, he adds, it's "a huge market."

The company was initially conceived by Rosenfield in 1997 under the umbrella of Knowledge Universe, a California holding company that has interests in numerous education and training companies and counts Michael Milken as one of its three principal owners. A titan of Wall Street in the 1980s, Milken later went to prison and paid a $1-billion-plus fine for securities-law violations. (Lowell Milken, his brother, and Larry Ellison, the chief executive officer of Oracle, are the other major Knowledge Universe owners.) Milken plays no active role in UNext.com, says Rosenfield. Nonetheless, Milken's association with the company became a bit of an issue when the University of Chicago was deciding whether to sign on.

Originally, Rosenfield's fledgling venture was financed wholly by Knowledge Universe and was known as Knowledge University. In late 1998, however, Rosenfield and the Knowledge Universe principals parted company; UNext.com was spun off, with Knowledge Universe still owning about 20 percent of UNext.com but having no voting rights. Knowledge Universe also kept the rights to the Knowledge University name. It plans to use the name for its own Internet-based higher education venture, to be aimed at individual students rather than companies.

The company is stirring debate over the ways in which colleges and universities deploy their academic resources and reputations for financial gain. Rosenfield's involvement became an issue, with several faculty members openly asking whether it was appropriate for him—a University of Chicago trustee—to personally profit from a deal in which his company would gain credibility because of its connections with the university. Rosenfield says that the suggestion he was trading on the university's reputation for his private advantage is "absurd." The trustees followed their usual conflict-of-interest policies in considering the deal, he says, and he did not participate.

Three of the university's renowned economists—Gary S. Becker, Jack Gould, and Merton H. Miller—serve on UNext.com's board of directors and own a stake in the company. The dean of the law school, Daniel R. Fischel, is

also an investor. Geoffrey Stone, the University of Chicago's provost, dismissed any suggestion that Rosenfield's position or the involvement of several Chicago professors as UNext.com board members and advisers had impaired its ability to independently evaluate the deal. "Some people, like myself, take some comfort from the fact that the advisory board has people on it that we respect," he says.

Marvin Zonis, a business school professor, has some lingering concerns. "The issue of the University of Chicago lending its name to another institution to make a profit is a very problematic issue," he says. But he also notes that many faculty members do something similar when they consult for a company. And the leaders of the business school, he adds, consider the deal an excellent opportunity to extend the school's name globally.

The faculty committee examining the proposal recommended going ahead because of assurances that the University of Chicago's financial terms would be at least as good as those of any other partner. Zonis notes that the potential for a big payoff was also "a very important part of the motivation at the business school. If the reward were a pat on the back, it would have been a different story."

Under the UNext.com business model, contracts make clear that the content going to the company is coming from the institutions, not from any particular faculty member. UNext.com will pay the universities in return for receiving help from faculty members to produce courses or short lessons in topics such as how to conduct basic marketing and how to compute net present value. The university, not the professors, will own the rights to the intellectual property developed under the UNext.com contract. The money goes to the universities, which will then compensate the participating faculty members under terms devised by each institution.

The real money in the UNext.com deals will go to the institutions, not individual professors. And that, says David Brady, associate dean at the Stanford Business School, is a great part of the company's appeal.

Under the terms of the contract, Chicago's Graduate School of Business is expected to supply faculty expertise to UNext.com in several subject areas. Although no particular professor will be compelled to participate, Stone says the University of Chicago will consider participation with UNext.com as part of the business school faculty members' teaching responsibilities, for which they will receive compensation or release time.

Students will not receive credit or degrees from the participating universities, nor will they be taught by professors from those institutions. Eventually, they might receive credit from a new institution that UNext.com plans to create, called Cardean University. All participating universities will receive limited rights to use the courses they and other institutions help to produce, as well as the underlying technologies to deliver the courses.

The real money in the UNext.com deals will go to the institutions, not individual professors. And that, says David Brady, associate dean at the Stanford Business School, is a great part of the company's appeal. Universities make money off patents, but "they missed out on textbooks," he says, describing the way universities traditionally claim rights to professors' inventions but not their books. "That's why they're signing," says Brady. It's their way of "getting a piece of the action." UNext.com provides a way for universities to finally profit directly from the scholarly course materials that their professors produce. Each institution will receive a guaranteed stream of royalties that, according to some sources at the universities, would amount to a minimum of $20 million over five to eight years.

Should the privately held UNext.com go public, the participating universities would have the right to convert those royalties into stock, giving the institutions insider opportunities to capitalize on Wall Street's fever for Internet start-ups and for-profit education companies. Though UNext.com would not reveal what percentage of the company each university could potentially own, Rosenfield said the collective total could be 20 percent after the

initial public offering. Distance learning is opening up a whole avenue of opportunity to profit from intellectual property, and "universities want something out if it," he says.

Comments and Questions

The UNext.com case, in which institutions are making business arrangements with an external organization, is the reverse of the Arthur Miller case. This relationship with a third party is more typical of those that colleges or universities have had in the past. Yet it raises interesting questions about the relationship of the higher education institution and the faculty members' intellectual property. Under the UNext.com business model, contracts make clear that the content going to the company comes from the institutions, not from any particular faculty member, and that the university, not the professors, will own the rights to any intellectual property that is developed. In addition, the university will consider participation with UNext.com as part of the business school faculty members' teaching responsibilities, for which they will receive compensation or release time.

Here are some questions to consider:

1. The issues surrounding the deal became especially heated at the University of Chicago because of the faculty's underlying anger toward the administration over financially driven moves that they said could undermine the university's traditional mission. Will the deal lead to a corrosion of academic values?

2. Does the University of Chicago's participation constitute a product endorsement? UNext.com will have the right to use the institution's name and logo in a mutually-agreed-upon manner, but the contract gives the university the right to control how its name is used and an ability to withdraw from the deal altogether should it become dissatisfied.

3. Some faculty members at the University of Chicago remain worried about the long-term message such arrangements send. Some professors have questioned whether administrators with "dollar signs flashing in their eyes" are letting a desire for profit shape faculty priorities. Does that mean the market will start determining how intellectuals should spend their time at a university?

Under the UNext.com business model, contracts make clear that the content going to the company comes from the institutions, not from any particular faculty member, and that the university, not the professors, will own the rights to any intellectual property that is developed. In addition, the university will consider participation with UNext.com as part of the business school faculty members' teaching responsibilities, for which they will receive compensation or release time.

4. Suppose Harvard's law school dean assigned Arthur Miller to teach at Concord as part of a contractual relationship between the two organizations. Does this arrangement suggest that the university is becoming an editorial or production house and using its faculty as its source of content? If UNext.com is performing that role, what value is the university adding to the equation?

5. What are the implications when a university makes a commitment to provide content but not teach, when it disaggregates creating course content from offering the course for college credit?

6. Some in higher education believe that for-profit educational organizations are, in essence, "cannibalizing" traditional institutions to the organizations' benefit and to the institutions' detriment. How can a college or university protect its own resource investments in this environment?

case 3

The Entrepreneurial Faculty
The CaseNET Case

Adapted from Ida Lee Wootten, "Teacher Training Gets a New Twist with Online Case Study," Chronicle of Higher Education, *September 12, 1997.*

The University of Virginia (UVA) is offering a package of case-based courses sold over and delivered by the Internet to colleges, universities, and school districts in North America and overseas. Called "CaseNET," the set of courses is offered in a case study–based format designed to build problem-solving skills and promote interdisciplinary teaching in elementary, middle, and high schools. Similar to the approaches used in business, law, and medicine, the cases portray scenarios that occur in culturally diverse classrooms. Students gain practice in employing educational theory and pick up practical knowledge in addressing real-life classroom situations. About 300 students from eleven colleges and universities and ten school districts are currently enrolled in three courses: "Teaching Across the Content Areas," "Standards of Learning and Assessment," and "Using Technology to Solve Problems in Schools."

The colleges, universities, and schools that purchase the courses can customize them to meet students' needs by requiring completion of varied reading materials and projects. Students can earn undergraduate or graduate credit for the courses. Three kinds of arrangements are possible:

1. Higher education institutions buying the courses can repackage them using their own course titles and charge their own tuitions. As an example, the University of Dayton uses its course titles and charges its tuition after it pays the developer, the Curry School of Education, a fee for the CaseNET offering. Students earn credit by registering with their home institutions.
2. Students can register and earn credit directly with UVA.
3. School districts can use the courses as in-service training for teachers and school administrators to satisfy recertification requirements. For those who are already teaching, the courses provide a new kind of field experience. Teachers gain electronic connections to people worldwide.

UVA in-state students and Virginia teachers pay $399 for a three-credit course. Out-of-state students and teachers, both current and prospective teachers, pay $588 for a three-credit course. Teachers who take the course for professional development only (no credit) pay $350 per course.

Two faculty members and their graduate students in the Curry School of Education developed the cases with support from the Hitachi Foundation and AT&T. The entrepreneurial faculty have gone outside the normal university bureaucracy to offer these courses. They have used UVA's Continuing Ed structures to enroll students. Some students are enrolled at other institutions and are receiving credit through those institutions. In these cases, the faculty have negotiated a fee for the other institution to pay to them directly. Those funds have been handled relatively "informally," coming directly into the school and being allocated to the faculty members with no institutional involvement. All of this is the subject of keen interest by the provost and other university administrators. No one seems to know quite how to handle the process. This model of instruction has raised just about every issue of institutional policy one can imagine—issues that no one has considered except in this specific case.

Two UVA professors teach the courses, with the assistance of faculty at the participating higher education institutions and teachers and administrators at the private and public K-12 schools in the participating districts. Instructors who lead the courses at the participating college, university, and school sites do not need prior Internet experience. CaseNET provides tutorials on how to navigate the Web and electronic course sites. Instructors are given passwords that allow them to access teaching notes, suggestions on analyzing cases, and tips on leading on-site and electronic discussions. In addition, instructors who use the courses complete Curry School training sessions.

Although CaseNET is delivered via the World Wide Web, video conferencing, electronic discussion groups, and e-mail, students also meet at designated times at physical locations, where instructors guide their work. During the first week of class, photographs of students are posted electronically so that participants will "know" their colleagues at other sites. Once they begin analyzing cases, students will post their case-solving suggestions on the Web, promoting consideration of differing viewpoints. Electronic videoconferences held throughout the semester allow discussions about the cases among faculty, teachers, administrators, and students at participating schools or institutions. Near the end of the course, students participate in a case-solving contest. They also create case-based projects for their own students or for colleagues.

CaseNET illustrates a situation in which a number of highly entrepreneurial faculty are, in essence, running a business from their offices ... Should UVA step in to control the faculty members' activity, or should the university find ways to encourage their entrepreneurship?

Comments and Questions

CaseNET illustrates a situation in which a number of highly entrepreneurial faculty are, in essence, running a business from their offices—registering students for credit, collecting fees, and so on. What attitude should the institution take toward this activity? Should UVA step in to control the faculty members' activity, or should the university find ways to encourage their entrepreneurship?

Here are some questions to consider:

1. Many observers are concerned that this activity is being conducted outside the realm of the administration or outside of an academic sanction, that faculty are negotiating for themselves. Does the institution have an obligation to maintain control of this situation? If yes, how should it go about doing so?

2. What happens if the products being produced are not of high quality? What is the impact on UVA's reputation?

3. If the case materials generate a substantial revenue stream, how should this be divided among the interested parties?

4. Some believe that in the information age, value will reside not in content but in reputation—that is, not in who owns the content but in who owns the label. In this instance, is it problematic that UVA is not controlling its brand or its trademark?

5. Historically, distance education programs have had arrangements whereby the institution works with faculty to create materials and then licenses these materials to other institutions. There is a substantial body of good practice on this. Isn't the problem in this case a procedural one, that the administration hasn't figured out how to handle the nontuition income stream and the licensing and sales issues?

6. Are the goals of the traditional academic program and those of a virtual program, as illustrated by CaseNet, different, even though the educational content may be the same? Do they require two different kinds of business model?

case 4

Where Do We Go From Here?
The Math Emporium Case

Adapted from Florence Olsen, "Virginia Tech's 'Math Emporium' Changes Grades and Attitudes," Chronicle of Higher Education, *October 8, 1999, and Florence Olsen, "The Promise and Problems of a New Way of Teaching Math,"* Chronicle of Higher Education, *October 8, 1999.*

When politicians visit Virginia Tech's Math Emporium, a 58,000-square-foot computer classroom, they see a model of instructional productivity, a vision of a future in which machines handle many kinds of basic undergraduate teaching duties—and universities pay fewer professors to lecture.

Professors who work in Virginia Tech's Math Emporium have always believed that this is a revolutionary way to teach undergraduates. And they have data, they say, that backs them up. The percentage of students earning a grade of 2.0 or better in business calculus is up from 66 in 1996 to 78 in 1998, the second year the course was taught in the emporium. The percentage of students who got Ds, Fs, incompletes, or no grades at all in the course dropped from 25.2 in the fall of 1996 to 16.4 in the fall of 1998. The professors credit the improved grades to the emporium's mix of online instruction, coaching, and student-to-student help.

Other figures appear to support the university's claim that it can teach more undergraduates more effectively in the emporium than it could in traditional lecture classes. Besides helping students keep up, the emporium has contributed to the rise in the average grade earned in pre-calculus, says Linda H. Scruggs, an assessment coordinator. She says that the average pre-calculus grade rose from 1.98 in the fall of 1996 to 2.41 in the fall of 1998.

Scruggs discounts critics who ascribe students' improved performance to grade inflation or to the better preparation of students before they came to Virginia Tech. Only 54 percent of the 1,373 Virginia Tech students who took pre-calculus in the fall of 1996 earned an average grade of 2.0 or better. By the fall of 1998, when 1,229 students took pre-calculus in the emporium, 73 percent of the class achieved a 2.0 or better.

Despite its successes, the future of the twenty-four-hour-a-day Math Emporium is not entirely ensured, according to some of the professors who teach there. Because a commercial market in college-level courseware has been slow to develop, they say, the university has been forced to develop software on its own. But it cannot afford to do so indefinitely.

In the fall of 1997, when the emporium opened its doors, visitors came to Blacksburg, Virginia, to see the nearly acre and a half of open classroom space and the 500 Apple PowerMac computers. Now, as then, dozens of graduate-student and undergraduate helpers can be observed strolling among the hexagonal pods on which the emporium computers sit. The helpers are available to help the students who are stuck on math problems.

Fewer than a dozen of Virginia Tech's eighty mathematics faculty members have said they prefer not to participate in the emporium experiment. "We could have done something smaller, I suppose, something less far-reaching," says Michael Williams, associate vice-president for information systems and research computing at Virginia Tech. "But I think the emporium was absolutely inevitable," he says, given the budgetary pressure the university has faced under a pair of Republican governors, George F. Allen and James S. Gilmore III. "We have a Governor who tells us about every week that we're spending too much money, and that state schools are getting a free ride," says Williams. "There's no getting away from the instructional-productivity pressures." But good administrators also look at problems as opportunities, Williams says. "While we have these pressures, they've also given us an opportunity to improve our pedagogy," he says.

John Rossi, a mathematics professor whose specialty is function theory, directed the linear algebra course for 1,600 students last fall, assisted by student helpers and the emporium computers, which can run either Macintosh or Windows software. In the pre-emporium days, Rossi says, the math department scheduled at least twenty-five instructors to teach one or two linear algebra sections of

forty students each. Now the professors who have been released from teaching linear algebra are being used to increase faculty contact with students in other courses, especially those taking vector geometry.

Technology advocates who approve of what Virginia Tech is attempting say the Math Emporium exemplifies a transformation that they hope will gain momentum in higher education. "It's early, but I feel fairly confident that it will pick up steam," says Carol A. Twigg, executive director of the Center for Academic Transformation at Rensselaer Polytechnic Institute. Virginia Tech's emporium "is changing the labor requirements" for teaching linear algebra. In doing so, Twigg says, the university has shown that it can reduce its per-student instructional costs for the course from $77 to $24, a labor savings of $97,000 a year. "That's absolutely the lowest we've seen," says Twigg, whose center has given $200,000 to Virginia Tech and an equal amount to each of nine other institutions to convert lecture courses to self-paced, online formats that may reduce labor costs and improve learning.

> Universities and even textbook publishers are not well organized for developing software or for handling the installation, support, and maintenance that are part of the cost of doing business, Quinn says. Developing an online pre-calculus course is no less complex, he says, than developing a Web browser or a graphics package.

The Math Emporium has become a big draw. University of Alabama administrators, Pennsylvania State University's president, and University of Idaho officials all visited the site in the fall of 1999. Members of the Virginia Senate's Finance Committee like the emporium so much that they held a luncheon there, says Robert F. Olin, chairman of the Virginia Tech Math Department. "They were looking," he says, "at where higher education is going."

But not everyone is certain that the emporium's future is secure, says Frank S. Quinn, a mathematics professor. It survived a difficult start-up year, Quinn says, only because his math colleagues are "very intelligent, highly dedicated educators" who also have programming skills. They wrote the emporium's online linear algebra course themselves, in nine months. When it's not working, he adds, they're the ones who fix it. But the university cannot sustain the emporium indefinitely on extraordinary human effort, Quinn says. Olin agrees that the lack of commercial math software puts a burden on faculty members to design and maintain their own programs. "One of the immense tasks for our department," he says, "is creating the software we want to use."

Currently, linear algebra is the emporium's only complete, interactive, online course. It has an electronic hyperlinked textbook, self-paced tutorials, lectures on CD-ROM, and online quizzes. Lab exercises for traditional, lecture-based business calculus and other math courses are also available. A group of Virginia Tech faculty members is developing a Web-based pre-calculus course, which they hope to have ready by the fall of 2001. It would replace the outdated, commercial online textbook they are now using to teach pre-calculus in the emporium.

"We're still at risk if we don't get another big course in there that is fully automated," Quinn says, or at least a large course that is sufficiently automated to release additional instructors from traditional classrooms. The emporium experiment "is all about resource-shifting," he says, and that means freeing up professors and teaching assistants to give students the help they need in the emporium.

"The university has made too big an investment for us to just twiddle our thumbs," adds Olin. But he says the next course will be more difficult to create than was the linear algebra course. Although the technology was a new challenge in creating that course, three Virginia Tech faculty members had previously written a textbook for teaching linear algebra to freshmen. That experience helped give them a fast start, he says. "We went from cavemen to experts pretty quickly."

Olin says he wishes his department could buy math software as easily as it can buy textbooks. "There's just not a whole lot out there," he says. As department chairman, he

has been courting book publishers, but with disappointing results. "They only understand revenues generated from a book," he says. "They just don't see where mathematical education is going." Yet he has had discussions with several "software-inclined" companies, he says.

Universities and even textbook publishers are not well organized for developing software or for handling the installation, support, and maintenance that are part of the cost of doing business, Quinn says. Developing an online pre-calculus course is no less complex, he says, than developing a Web browser or a graphics package. Back in July 1996, educators interested in instructional productivity held a meeting—the Broadmoor Roundtable, in Colorado Springs—to discuss incentives that might help create a commercial market for college-level instructional software. But not much has changed since then, Olin says.

The "voluntary overload" on faculty members is a worrisome aspect of the emporium, according to Quinn, who wants the experiment to succeed but who says he is mindful of "the very, very many ways for something like this to fail."

Instructional software issues are unlikely to be resolved quickly, says Williams, the information systems vice-president. However much the emporium may improve teaching productivity, he says, he doesn't expect to see instructional software that can actually simulate human help and support for another eight to ten years. "If we want the software to help at all," he says, "it's got to understand how students might misconceive what is presented to them—and to figure that out from the student's response. Right now, only people do that well."

Comments and Questions

Although Virginia Tech originally developed the Math Emporium as a way to improve service to its students, the end result was a replicable instructional methodology that can be exported to other settings. This case involves a number of issues related to the university's opportunity for further development. Research universities in the United States have historically produced a significant number of marketable outcomes, yet in general, universities have recognized that they do not have the capital or the expertise to take these experiments into the market. Consequently, they have sold or given away developments or created spin-offs. What is the best course of action to achieve institutional goals?

Here are some questions to consider:

1. Should Virginia Tech try to commercialize and market this product itself, or should it work with a company to do this?

Although Virginia Tech originally developed the Math Emporium as a way to improve service to its students, the end result was a replicable instructional methodology that can be exported to other settings.

2. Sustainability of the "experiment" is an issue. If the goal is for the university to serve its own students, it needs to have an infrastructure to sustain the program. If the intention is to take this idea and export it to others, the issues are the same but on a much grander scale. Does Virginia Tech want to be in the business of upkeep—of maintaining and upgrading the software?

3. If Virginia Tech works with a company to help sustain or market the program, how can it create a partnership that will allow the university to have some control—for example, to maintain academic standards?

4. Other institutions want to replicate the Math Emporium model. This will introduce the element of competition—that is, the commercial world will have a choice of institutions to partner with. Should Virginia Tech take advantage of its first-to-market position?

5. Will attention to commercializing products divert institutions from their goal to serve their students better than the current model?

6. What is the likelihood that a commercial enterprise will hire the talented group of Virginia Tech faculty away from the university to run the emporium on a large scale in a commercial environment?

Online Courses and Course Materials: The Context

Online course materials are typically developed by a faculty member, with support from the information technology (IT) department, for a particular course at the institution where the faculty member is employed. Faculty members are hired and paid to teach courses and to gather, organize, and create course materials that facilitate the campus-based course experience. Since the institution pays the faculty to teach courses as a central task of employment, many in the institution assume that materials created for this task belong to the college or university, just as commercial products or patents developed for a company belong to the employer, not the individual worker. Yet in the past, most colleges and universities have rarely, if ever, laid claim to the original materials prepared by faculty for course use.

Today, many institutions appear to have taken the approach that colleges and universities can quickly develop online courses, since the school has the source of course content at hand: the individual faculty member. This sudden recognition of the faculty as a resource to create a tangible product is new to the higher education community, brought on by the recognition of the Internet as a distribution medium to export the institution's courses and degrees to a wider audience. This new dynamic has broken the well-established, tacit approval given to the faculty to sell original work as long as such selling does not interfere with the fulfillment of the faculty's teaching, research, and service responsibilities.

It is this seemingly sudden claim of ownership of faculty-developed content as a Web "product" that seems to have created the conflict that the symposium addressed. In the past, instructors created exercises, essays, experiments, labs, and other original content to teach existing courses at an institution, and they used this content to develop textbooks and teaching ancillaries (such as instructors' manuals, workbooks, study guides, and test banks) without institutional claims of ownership. Typically, a faculty member creates a textbook on his or her own time. Although the institution may reward the faculty member for the achievement, the work itself is done at the instigation of the individual faculty member and for the faculty member's own benefit. Faculty members are not specifically tasked by their institutions to create the work. The college or university usually makes no claim to the content and rarely opposes the publication process.

Whereas the creation of online course materials is in many ways analogous to the creation of textbooks, in other ways it is not. The textbook analogy holds true if the faculty member acts independently and does not call on the institution for support. Unlike the writing of textbooks, the development of online course materials typically involves a significant investment of resources by the institution. Even if the faculty member has not been specifically commissioned to do the work, the faculty member is likely to have asked the institution for technical support (server time, use of institutionally licensed software), staff support (instructional designers, html programmers, text editors, graphics specialists, research assistants), and administrative support (copyright clearance of third-party materials). Thus some argue that the sudden institutional claim of ownership of faculty-developed content has arisen because of the significant contribution of institutional resources involved in the creation of the online course materials. Others respond that one cannot use these investments as a criterion since nearly all works at a college or university are created by using substantial institutional resources.

Why would an institution suddenly assert its ownership of something that it had seemingly not valued in the past? One reason may be a belief that online courses and course materials represent a potential source of revenue from which the institution should benefit.

Why would an institution suddenly assert its ownership of something that it had seemingly not valued in the past? One reason may be a belief that online courses and course materials represent a potential source of revenue from which the institution should benefit. In the words of the *Chronicle of Higher Education*, "The growth of distance education and the widespread use of multimedia course materials have

convinced some administrators and faculty members that they're sitting on gold mines: It might be possible to package college courses and sell them over the Internet or on disks."[1] Even though the chances that any given product would be profitable may be one in a million, institutions do not want to be caught in the position of having a faculty member generate a highly successful course without the college or university reaping some of the reward.

A second reason for institutions' sudden interest seems to be a fear that faculty members will package their courses and make them available in multiple markets, often in competition with the college or university that employs the faculty. Institutions are worried about the faculty member who has, according to the college or university, taken advantage of the institutional resources and is now using them at another college or university where there may be a conflict of interest, whether simultaneously or after leaving the home institution. Asserting ownership of courses represents an attempt by the institution to try to control competition.

Some view the creation of online courses as a thinly veiled effort on the part of administrators and their corporate brethren to use the Internet to automate professors' work and thus to eliminate the faculty from the educational experience.

While colleges and universities are uneasy about giving away the e-equivalent of Gatorade or subsidizing their competition, faculty members have their own set of anxieties. Some, like York University professor David Noble, view the creation of online courses as a thinly veiled effort on the part of administrators and their corporate brethren to use the Internet to automate professors' work and thus to eliminate the faculty from the educational experience. In Noble's words:

> Once faculty put their course material online, the knowledge and course design skill embodied in that material is taken out of their possession, transferred to the machinery and placed in the hands of the administration. The administration is now in a position to hire less skilled, and hence cheaper, workers to deliver the technologically prepackaged course. It also allows the administration, which claims ownership of this commodity, to peddle the course elsewhere without the original designer's involvement or even knowledge, much less financial interest. The buyers of this packaged commodity, meanwhile, other academic institutions, are able thereby to contract out, and hence outsource, the work of their own employees and thus reduce their reliance upon their in-house teaching staff.
>
> Most important, once the faculty converts its courses to courseware, their services are in the long run no longer required. They become redundant, and when they leave, their work remains behind. In Kurt Vonnegut's classic novel *Player Piano* the ace machinist Rudy Hertz is flattered by the automation engineers who tell him his genius will be immortalized. They buy him a beer. They capture his skills on tape. Then they fire him.[2]

Noble's views may appear to be extreme, but they reflect a widespread faculty concern that professors will be replaced in whole or in part. A recent American Federation of Teachers report on technology in higher education warns, "A profession already afflicted with an extraordinarily high underemployment of its members—45 percent are part-time—will experience further decline as thousands retire in the coming years and are not replaced by younger members of the profession, but by desktop workstations, courseware, 'self-paced learning,' large multi-site distance learning classes, and a re-engineered capital-to-labor ratio."[3]

Participants at the Miami symposium thus began their discussion by examining the two scenarios that are contributing to the state of high anxiety in higher education today:

1. How likely is the *Chronicle's* "gold mine" scenario? Under what circumstances would it occur?
2. How likely is Noble's "player piano" scenario? Under what circumstances would it occur?

But before turning to that examination, the participants found it useful to clarify some of the terminology surrounding this issue. In the ongoing discussion about course ownership, people frequently use the terms course and course materials more or less interchangeably. In other cases, they make a distinction between the two. Here are some examples:

- Faculty own course materials but not courses.

- Faculty own course materials *and* courses.
- Institutions own course materials.
- Institutions own courses but not course materials.
- Institutions own courses *and* course materials.

This lack of precision contributes to the current state of confusion and uncertainty.

Participants at the symposium were asked, "Do you see a distinction between courses and course materials?" Almost everyone did see a distinction, but at first it was hard for them to agree on what differentiates the two terms. After a certain amount of discussion, the participants agreed to define *course materials* as the fixed expression of ideas and resources that are used as the basis of a course. These materials, all agreed, are readily and instantly subject to copyright protection.

Course materials are used to accomplish the following purposes:

- To explain course content
- To illustrate course concepts
- To illuminate certain portions of a course
- To convey the content of the course as a means f or achieving course goals

Examples of course materials include text, images, diagrams, graphs, a full-blown multimedia presentation, instructors' notes, exercises designed for online collaboration, Web-ready content, multimedia developed for Web distribution (flash animation, Java applets, video clips, audio), individual and collaborative exercises, readings, bibliographies, lectures, exercises, simulations, and group projects.

The participants also noted that course materials may include commercially available materials such as textbooks or learningware or materials that have typically been prepared by the instructor of record and not commercialized, materials such as a syllabus and class notes. Other creators of materials include instructional designers and students. In fact, in many courses, course materials consist of a mix of original materials developed by the faculty member and content provided by publishers, developers, and other authors. Any given course may be made up of course materials derived from multiple independent sources, thus complicating the ability for one person or institution to assert ownership.

In an online environment, course materials take on greater importance. In a physical classroom, an instructor can meet with students and have no materials, yet he or she can still deliver the course. In cyberspace, that is more difficult. Course materials begin to embody or encapsulate many of the processes of the physical classroom.

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The symposium participants next considered the question, "Can course materials become a course?" Some said yes. Here are some examples of the view that course materials can "morph" into a course:

- The multiple components of syllabi, readings, bibliographies, lectures, exercises, simulations, and group projects collectively make up the course.
- Course materials are part of a course, and when all the materials have been gathered, the total is a course.
- Illustrations mounted on a course Web page are course materials. If an instructor goes on to develop an entire Web site devoted to this course, at some point it becomes an online course.
- The term *course* implies that a comprehensive set of materials has been developed and combined in such a way as to substantiate a semester-long program of study.

Other participants said no, course materials cannot turn into a course, pointing out that a course includes other significant elements:

- *Interactions.* A course consists of the complex interactions—between faculty and students, between students and materials, and among students—that constitute the learning experience. In an online course, technology helps to facilitate those experiences through chat sessions, threaded discussions, student projects, and so on.
- *Faculty design.* A course is a planned program of study with both broad and specific goals and with strategies for achieving those goals. A faculty member designs a learning process to assist the student in mastering the subject

matter of a course. It is that faculty expertise that institutions buy when they hire a faculty member, whether full- or part-time. To "offer a course" means the same thing as to "teach a class." Thus we do not speak of even the most complete textbook as a "course." Courses include instruction that organizes, explicates, and supplements the course materials. In the current (and short-term future) state of artificial intelligence, that provider of instruction will be a human being.

- *Constant change.* One could argue that there is not, never was, and never will be a course—only instances of various groups of individuals joining together to discuss, and hopefully learn about, some particular body of knowledge. Like Heraclitus's river, a course is never the same. From year to year the actual content changes to reflect different instructors' temperaments and idiosyncrasies, changing knowledge in the field, and choices of ancillary materials such as handouts, textbooks, and reading lists.
- *Institutional sanction.* Courses are offered as part of an institution's curriculum—that is, they involve more than the faculty member's design. They consist of an institutionally defined scope and sequence of content for which the institution grants credit or in other ways recognizes student achievement. The authority to register students, collect tuition, and award credit is the responsibility of the institution created to perform those functions. An institution sanctions, schedules, describes, and "markets" the course and records the outcomes each time the course is offered.

In summary, the symposium participants decided that courses include five distinct components:

1. Content—the subject matter of calculus, Spanish, biology, and so on

2. Course materials—to illustrate or explain the content

3. A planned program of study— the structure of the course, including learning goals and strategies for achieving them

4. Planned and spontaneous interactions—between faculty and students, students and materials, students and students

5. An institution or organization—to offer the course, market it, and award credit

The distinction between courses and course materials is important because it relates to the two primary drivers of the ownership discussion: the fear or enthusiasm, depending on your point of view, that online courses are commodities that can be packaged and sold elsewhere. Although it is clear that course materials can be bought and sold elsewhere, this does not seem to be true for courses—that is, can courses be "owned," or can they only be "offered"? And if we are talking about packaging and selling course materials, the implication is that all we're really discussing is whether or not institutions should go into the publishing business.

Let us now turn to our examination of the two scenarios in detail.

The Gold Mine Scenario

The growth of distance education and the widespread use of multimedia course materials have convinced some administrators and faculty members that they're sitting on gold mines: It might be possible to package college courses and sell them over the Internet or on disks.

When the symposium participants were asked about the likelihood of the gold mine scenario, there was universal agreement: most online courses and the materials contained within them are not valuable enough in economic terms to result in much, if any, corresponding pecuniary rewards. It is unlikely that even a small percentage of faculty or institutions will experience any commercial success whatsoever, just as it is unlikely that most faculty members' lecture notes will become successful textbooks, though with help from a good publisher, some will. The agreed-upon estimate of those courses that may be successful was less than 1 percent.

Selling course materials is different from offering distance-learning courses. When an institution uses online learning to reach new students who are not on campus, these new students are, in fact, the institution's students. online learning expands the definition of "student population." Certainly, if an institution is serving its students, it should be able to recover its costs and reinvest any excess revenue in the institution's mission. However, none of the symposium participants viewed the development of off-campus markets as a potential gold mine. Participants commented that those with significant experience in distance learning have found that any excess revenue generated is relatively modest. And as the field becomes more competitive, it is questionable how many institutions will be able to do more than recover their costs.

If an institution moves toward developing and selling packaged intellectual products that are disengaged from a structured and accountable educational experience, that endeavor is not much different from selling textbooks or instructional software without offering a full learning experience. The institution simply becomes a publisher in competition with other commercial publishers. A fundamental question is thus whether colleges and universities have the talent, personnel, and business mentality to pursue commercial ventures. Universities have a history of running ventures that lose money or at best break even (e.g., hospitals and university presses). More developers, publishers, and corporate interests are entering the higher education market and looking at potential crossovers between the traditional higher education student, the corporate employee, and the consumer market. Course development is becoming a competitive and fast-moving industry.

A fundamental question is thus whether colleges and universities have the talent, personnel, and business mentality to pursue commercial ventures.

The possibility that faculty and institutions will develop top-quality content for Internet distribution faces significant hurdles:

- *Higher education is not skilled at generating business.* The executive leaders and decision-makers in higher education are generally not knowledgeable about the IT industry and the requirements of product development. They lack awareness of the potential learningware market. Most educators have little experience with developing business plans. Higher education also lacks a track record in successfully developing products.
- *A high-quality online course differs significantly from a traditional classroom course and requires a range of personnel and skills not often found within the college or university.* It is not clear that our historic institutions of higher education have the mind-set, the venture capital, or the particular skill sets required to build the "killer apps" that are most likely to dominate Net-based learning. Putting a syllabus, or course notes, on the Web or exchanging e-mail with students is only remotely related to designing compelling learning applications.
- *The institution must be willing to fight the recruiting and salary battles that currently plague the Internet and media industries.* The key asset of a production house in developing educational technology and media-based products

is the personnel. Such development is a creative process, and creative staff are difficult to recruit and retain. The institution may spend time and dollars developing a quality production staff just to see it recruited away to higher-paying jobs with stock options.

- *The institution must establish a strong business-development staff and an incentive structure that is foreign to most colleges and universities.* An internal commercial venture will rely on a working relationship between the business unit and the faculty members of the institution. The difficulties that exist between the editorial staff of traditional text publishers and the distributed learning groups within those publishing companies do not bode well for a cordial and productive working relationship between faculty and an internal college or university business enterprise.
- *The cost and the skill set required to produce compelling learning experiences on the Net suggest that a few "publishers" will dominate the marketplace.* Faculty members are not trained and have little experience in developing multimedia content for online distribution. A new set of skills and techniques must be developed by faculty dedicated to online courses. The institution must also develop the infrastructure necessary to enforce design specifications to ensure high-quality, consistent course preparation. Are administrators ready to examine the standards by which faculty contributions are measured?
- *Those faculty and staff with such skills are more likely to be attracted to private industrial efforts with all the attendant lures of R&D money, stock options, etc.* Are there any best-selling authors (including faculty authors—Carl Sagan, e.g.) who choose to use the institution to help create, develop, or market their products? Faculty who are major participants in the development of significant online course development projects are likely to do so in an extra-institutional role in a private, commercial venture.
- *There is a large disparity between "corporate speed" and "college speed."* Educational institutions would need to learn to move much more quickly in order to be competitive. Current decision-making structures on campus—or the lack of them—would form an obstacle. Decisions to change are frequently made by a faculty committee, and the committee system tends to support the old way. Timing is generally set by the institution, not by the customer. Institutions would need to make major adaptations in operating procedures.
- *Venture capitalists are unlikely to invest in higher education.* Without the expectation of profit, private investors and entrepreneurs will not make the investments and take the risks needed to create and market a new technology.

Finally, should colleges and universities be in the course-development and course-distribution business for users other than their own students? Each university will have to ask whether its courseware production is sufficiently related to its basic academic purpose so as to qualify for tax-exempt treatment. Questions about the desirability of forming for-profit subsidiaries or affiliates to undertake course production or distribution can be expected from all of higher education's stakeholders.

There is a huge distinction to be made between generating revenues to support the institutional mission and to cover operational costs and turning a profit on an investment. In the present climate, colleges and universities must seek creative ways to generate new sources of revenue to fund the activities that are core to their mission. While management of the modern college or university requires wise business practices, its status as a nonprofit institution is not fundamentally changed. Higher education institutions do not operate on the corporate model, which is bent on gaining the highest-possible return on investment, evaluated through the use of price/earnings ratios and similar productivity measures. Colleges and universities measure their value and worth by the quality of educational experience they provide, by the nature of the research they generate, and by the credentials of the faculty they recruit and retain.

Institutions of higher education must uphold their responsibilities to their equivalent of shareholders: faculty, students, alumni, and citizens of their state. Colleges and universities are institutions for teaching, research, and service. If, in the process of advancing those ideals, the institution is able to generate income from sources ranging from tuition to T-shirts, the "profits" are not the source of serious ethical quandaries. As long as the activity is pursued in furtherance of the institutional mission of advancing knowledge and scholarship, the generation of revenues remains an important but secondary objective. The more that colleges and universities encroach on other, usually commercial functions, such as publishing, the more they are at risk of losing the privileges (e.g., state support, nonprofit status) that support their teaching, research, and service missions.

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The Piano Player Scenario

Once faculty put their course material online, the knowledge and course design skill embodied in that material is taken out of their possession, transferred to the machinery and placed in the hands of the administration. . . . Most important, once the faculty converts its courses to courseware, their services are in the long run no longer required.

The symposium participants were asked: "How likely is the 'player piano' scenario? Under what circumstances would it occur?" Their responses ranged from "highly unlikely" to "silly" to "utter nonsense." Their reasons included the following:

- online courses require much greater faculty involvement and interaction with students. Faculty teaching online courses report a higher level of interaction between themselves and their students than they do in the classroom. The new technology-driven courses apparently will have equal or greater need for human interaction, not less.
- There is a natural limit to the number of people who can interact effectively in a particular course.
- Courses tend to be very idiosyncratic as opposed to standardized.
- People don't go to college to get "canned courses." Students demand a quality experience that includes a measure of interaction with an instructor. The need for someone with the expertise and authority to guide and facilitate the experience and promote interaction among peers in the class is still essential.
- online courses (at least the good ones) use the Internet to enable and facilitate interaction between faculty and students and to bring students into learning communities where they can work together. Whereas the Internet can function as a publishing environment—it can store and retrieve information—the real power of the Internet is as a means of bringing people together around ideas. It is a communications tool more than a publishing tool.
- Although course materials are infinitely scalable, courses require a reasonable faculty-student ratio to ensure good interaction.
- online learning presents an experience different from that of the traditional classroom paradigm, and it requires a different teaching approach and a modified role for the instructor, not the elimination of the instructor.

All the symposium participants agreed that faculty roles are changing. One participant pointed out that after the invention of the printing press, faculty feared they would lose their jobs if students started getting their knowledge from books. This fear proved to be unfounded. Faculty are still here, but the nature of education has changed.

After the invention of the printing press, faculty feared they would lose their jobs if students started getting their knowledge from books. This fear proved to be unfounded.

Online education is shifting toward a much more active environment, and faculty need to be there to guide this process. A good faculty member adds value to a student's learning experience, but that contribution is not in delivering lectures or even in assembling learning material. Instructors are much more than content creators. Indeed, few are even that. Most instructors are dedicated not to developing course materials but to organizing course materials, guiding students in their study, facilitating discussions and the shared creation of knowledge, and assessing students' learning accomplishments. These responsibilities are no less important in the presence of technology than in its absence.

As long as faculty define their value solely by the lectures they give, they will believe that with technology they may not be necessary and they can be replaced. Learning is much more than attending a lecture, however. Institutions need to work with faculty to develop and reward their skills within this new environment. What people value today is faculty members' ability to control content; what we will value tomorrow is their ability to lead learning communities.

At the same time, higher education is beginning to see new, technology-mediated ways of organizing courses. These include many of the functions that are typically handled by the instructor and that can be replicated. As an example, remedial math software produced by Academic Systems organizes course materials, guides students in their study, tracks students' progress, and assesses their learning through interactive testing. In one application, Rio Salado College is tripling the number of students served by one instructor by using this software package; it is also showing greater success rates on the part of students. These highly sophisticated software packages appear to be best suited to high-demand, introductory subjects.

New forms of online learning may open the opportunity to redefine faculty work and to reallocate faculty resources. For example, fewer faculty members may be needed to teach introductory courses or big lecture courses that can be better delivered through innovative technologies. Who would mourn that loss? Very few faculty members like to teach these courses, and an equally small number of students like to attend them. Faculty members who might otherwise have been assigned to teach such a course may instead teach small sections of students in order to review their work more closely or upper-level courses in which individual attention is more critical. Through a reallocation of faculty time in connection with the large-scale deployment of technology, the institution not only should be able to educate more students and generate more tuition revenue but also should be able to develop better-quality programs and educational experiences for all students.

Symposium participants observed that in many cases, worries about intellectual property mask faculty members' deeper concerns about the changing environment of higher education, an environment that seems to require constant adjustment. These concerns include

- negative reactions to changing faculty roles and increasing competition in the higher education market;
- unfamiliarity with the technology itself;
- worries that the ATM-MTV generation thinks, "I can do it myself without faculty guidance";
- stress over increased workload;
- dissatisfaction with compensation (i.e., faculty want financial rewards in the absence of other rewards);
- a feeling that huge risks are involved in undertaking these pursuits; and
- discomfort with the increased visibility and accountability of an online environment.

These concerns are directly related both to job security (how can I adapt my talents and experience to an online educational environment?) and to the change in what has been a solitary task (teaching) to a collaborative task with multiple elements and multiple players, often with interests that may be at odds, thus accelerating the potential for conflict.

Fewer faculty members may be needed to teach introductory courses or big lecture courses that can be better delivered through innovative technologies. Who would mourn that loss? Very few faculty members like to teach these courses, and an equally small number of students like to attend them.

The dispute over intellectual property is symptomatic of a larger problem—the redefinition of the teaching mission and objectives of our institutions of higher education. Discussions surrounding intellectual property issues can and should be a means to an end: resolving the conflicts involved in the larger, more serious problem of redefining institutional missions and our relationships with other not-for-profit and for-profit institutions in a new higher education landscape and developing policies that contribute to the formation of these new relationships.

Can the Law Provide the Answer?

A primary obstacle that can get in the way of developing good policies is the expectation that the law (or lawyers) can provide an answer to what institutions should be doing. On many campuses, lawyers are being asked, in effect, to create policy. Several of the lawyers at the symposium reminded participants that practicing law is, to a large extent, about risk analysis: lawyers can explain the risks involved in any course of action, but they cannot make the decision whether or not to assume that risk. Quite often, lawyers feel that it is their obligation to discourage institutions from taking risks. Lawyers should not be allowed to make policy. Institutions must first decide what they want and where they want to go, and only then should they seek help from lawyers to craft a vehicle to help them implement those goals.

Still, at first glance, ownership of course materials appears to be a legal issue. After all, *copyright* is a legal term. But despite the many articles and monographs asserting what the law says about this issue, the fact is that the law is indeterminate on the matter of ownership of courses and course materials. Let us briefly examine the law and why there is a lack of clarity.[4]

Copyright

Copyright subsists in original creative works that are fixed for more than transitory duration in a tangible medium of expression. The subject matter of copyright comprises literary works, including computer software; audiovisual works; musical works; sound recordings; pictorial, graphic, and sculptural works; choreography or pantomime; and architectural works. Copyright exists the moment the work is fixed. Registration of the work is not required but is advantageous to the author if enforcement becomes necessary.

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Educators have long made copyrightable works the staple of their profession. Books, treatises, scholarly papers, course materials, syllabi, overhead transparencies, and lecture notes are all within the subject matter of copyright. Digitized versions of these materials are also copyrightable, as are new hybrid creations such as multimedia materials, Web pages, and educational software.

The Author, the Owner, and Control

Generally, the author of a work is the individual who fixes the expression. The author of a copyrighted work is granted several exclusive rights: the right to make reproductions of the work, to distribute the work, to create derivative works, to publicly display or perform the work, and to authorize any of these acts. The "default" rules for copyright ownership are less than clear. In copyright law, the initial owner of the copyright will be the work's author.

Works Made for Hire

In the case of works made for hire, the 1976 statute provides that the employer of the individual who creates the work is considered the author and holds the rights unless there is an agreement to the contrary. This provision allocates initial ownership of the work to the employer rather than to the creator.

Agency Law

The test as to whether a work is made for hire is based on principles of agency law. In general, if the creator of the work meets the criteria expected for a regular employee, the work will be considered made for hire. Factors that point to the creator being a regular employee may include income tax withholding by the employer, withholding for benefits or benefits paid by the employer, a working schedule set by the employer, materials and equipment provided by the employer for use in preparing the work, a long-term project relationship between the employer and the worker, and the right of the employer to assign projects to the worker.

Under the agency principles applied to works made for hire, college and university educators appear to meet the criteria for regular employees. They generally have long-term relationships with the institution, which has the right to assign them particular projects and tasks and which can dictate, to some extent, their working schedule. Most college and university educators are subject to income tax withholding and receive benefit packages from or through the institution. Additionally, most of the course materials and scholarship produced in higher education is generated with resources provided by the institution.

The Academic Exception

Several older court opinions hold that college and university educators are not employees for purposes of the works-made-for-hire doctrine. These opinions point to the general academic practice of allowing educators to retain the rights in scholarship and other materials they produce. These opinions and subsequent commentary also suggest that principles of academic freedom dictate this result: academic freedom of thought and expression might be unduly curtailed if colleges and universities could control academic output in the manner that large corporations control the output of their employees. The majority of these cases, however, were decided under the 1909 Copyright Act, which has since been superseded by a complete revision of the copyright statutes in 1976. Thus, there is some question as to whether the "academic exception" to the work-made-for-hire doctrine survived the revision of the law.

Therefore, there is a legitimate question as to the status of materials created by educators in institutions of higher learning, since the materials may or may not be works made for hire. One symposium participant, a non-lawyer, argued strenuously that there is, in effect, a default position in the law —that the creation of instructional materials is clearly work made for hire. In other words, he argued, though most institutions follow the default practice that the instructor owns those materials he or she creates, the default position in law is that the institution owns them. Indeed, courts are ruling that teaching materials are works made for hire within the scope of faculty employment. Odds are that judges will rule these are works made for hire because the teacher exception to the work made for hire is not strong.

The lawyers at the symposium, however, pointed out that the law does not provide "an answer." Rather this issue is a matter of interpretation of existing statute and will get resolved in the courts, so we cannot say with certainty what the default position is. One lawyer said that there may be a default position in the law but that we don't know what it is. Another lawyer felt a bit more certain about what the default position is, but he made the same point: because we differ about what the default is, the issue will get resolved in court, with lawyers on both sides vigorously arguing their points.

As an example, consider the question of the degree of agency: to what extent is a faculty member operating as a free agent (e.g., he or she can hire an outside consultant) or operating as an employee of the institution. The more the faculty member is constrained, the more the product is a work made for hire and vice versa. Consider the differences between developing a highly individualized graduate course in an area of specialization and developing an introductory course with a common syllabus and final examination. And consider two lawyers arguing the case. An analogous situation is in the area of labor law, where the question of whether faculty members are managers or employees has been resolved differently in different situations.

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Part of the reason there is so much unease in higher education about this issue is because there is no default position, no definite "answer" to the question of course ownership. As a result, existing policies at colleges and universities vary greatly. There are three basic approaches, each with its own set of qualifications.

1. *Some institutions assert ownership over the copyrightable works of their faculty, citing the agency principles of works made for hire.* They may qualify the assertion of ownership—for example, only when the work is software or other specific media; only when projects are completed with the use of substantial institutional resources; only when the work can be patented or offers some prospect of royalties.

The college or university is not working in its best interest to assert work made for hire; the faculty is not working in its best interest to assert ownership. A far more productive approach is to focus on who needs to do what with a work rather than who needs to own it.

2. *Some institutions allow faculty members to continue to assert ownership over their copyrightable works.* Again, institutions may qualify the ownership by asserting the college or university's right to perpetual, nonexclusive, royalty-free use of the materials in its internally administered programs; by establishing percentages of royalties distributed to the baseline of institutional costs that must be recovered before faculty members can share in the financial return; or by requiring a split-royalty policy, in which the author returns to the institution all royalties for products sold to students at the college or university.

3. *Some institutions attempt to allocate ownership via contract.* It is critical to remember that the assertions of institutions or of faculty are immaterial to the actual authorship of the works. Authorship is dictated by the copyright statute—private parties are not able to change the allocation created by Congress, even if that allocation is unclear. Yet even though private parties cannot change the choices of Congress regarding authorship, they can allocate ownership of a work via contract. All or part of the copyright can be transferred between parties, and the terms of the transfer can be made subject to limitations of time, geography, or usage. This means that the scope of the transfer or license can be adapted to the needs of the parties—the license may be as broad or as narrow as they choose. Additionally, although private parties cannot usually alter a determination of authorship, they may secure their ownership expectations under uncertainty by providing for contingent allocations. For example, if a particular college or university wants to make certain that ownership is allocated to the faculty creator of a work, the parties can agree that even if a work is deemed a work made for hire, the institution will assign its rights in the work to the faculty member. This agreement, however, must be in place before work is completed.

Although this issue gets categorized as one of ownership—for example, the American Association of University Professors (AAUP) has issued a statement arguing that faculty should own their materials, whereas the presidents of the American Association of Universities (AAU) took the position that universities own the materials—several of the lawyers at the symposium commented that they try to move people away from posing the question as one of ownership. If someone asks the question "Who owns it?" the law is going to say simply, "I own it" or "you own it." That result is a wholly unsatisfactory response for all parties concerned. Ownership is in some ways a red herring. Since the bundle of copyright rights can be divided up, one can own something and have literally no right to use it, having given away all the rights except ownership.

The college or university is not working in its best interest to assert work made for hire; the faculty is not working in its best interest to assert ownership. A far more productive approach is to focus on who needs to do what with a work rather than who needs to own it. The notion of unbundling of rights has become popular in regard to this topic. The publication "Ownership of New Works at the University: Unbundling of Rights and the Pursuit of Higher Learning," by the Consortium for Educational Technology for University Systems (CETUS), includes a well-written explanation of this approach.[1] Rather than advancing an either-or position that pits institutional interests against faculty interests (and professional staff interests against faculty interests), the unbundling concept appears to be fair to all parties.

Although at first the unbundling approach appears to offer a rational solution to the issue, participants at the symposium came up with a radically different—and infinitely simpler—solution. They did so by treating the intellectually property issue not as a legal issue but as an academic issue. By stepping back and asking themselves a different question—"What do we want to encourage on our campuses?"—they reached a new position.

What Do We Want to Accomplish?

The symposium participants began with the assumption that institutions want to encourage faculty participation in the development and delivery of technology-based instruction. If so, institutions should proceed cautiously in asserting ownership of online course materials, especially when previous policy or practice has been to the contrary. Probably one of the most demoralizing things an institution could do would be to change the intellectual property ownership policy by saying, "We used to let you own your course materials, but that was before we realized there was money to be made off them."

To encourage faculty to invest considerable time, thought, creativity, and energy in the development and delivery of technology-based instruction, institutions need to ensure faculty members that the results of their investment belong to them, not the institution. Otherwise, there is little incentive for a faculty member to make that investment. As one symposium participant put it, the fastest way to derail any conversation about faculty engagement in course materials development is to assert that these are works made for hire.

This is true whether or not the materials are considered to have commercial value. If an institution starts with the assumption that for the vast majority of materials produced, the commercial market will be nil to little, ownership will be less significant than compensation for the time spent in producing the materials. If an institution starts with the assumption that the materials are likely to have commercial value, denying faculty both ownership and royalty rights may pose problems in motivating faculty to produce the materials in the first place, since good materials require a lot of work. Faculty who are well compensated and able to share in the commercial success of their work will be motivated to create.

It is difficult enough to persuade overworked and underpaid (in their view) faculty members to polish original content for publication (online or textbook content), much less to go through a long negotiation process with the administration regarding ownership and faculty remuneration. An institution should treat these technology innovations as original contributions to the betterment of education and should be generous and forward-thinking by offering attractive incentives for such activities. More liberal policies will incent faculty to more actively pursue the creation of original online course materials.

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A professor who invents a better way to teach online or learn through technology might be deemed as having fulfilled his or her commitment to the institution. Beyond the fulfillment of teaching duties for the specific course in question, he or she should be free to market the unique creation to others and reap the rewards. Colleges and universities should act as catalysts, as a rule, and give their professors the freedom to develop and own course materials, as an incentive to improving education for all.

Administrators should also commit themselves to supporting faculty who must manage the process of obtaining the permissions to use the copyrighted materials of others in Web-enhanced courses. Far too many "Web Course Agreements" require faculty to "warrant" that the course materials do not infringe on copyright and to agree to "indemnify" the institution in the event of a lawsuit for defamation or copyright infringement or any other form of liability arising from the use of the course materials. Agreements that seek to formally shift the burden of liability and responsibility for copyright management are not encouraging to the faculty member who is on the fence or is skeptical about the benefits of online instruction.

If an institution has made a *substantial* contribution to the creation of course materials, it may want to hold on to those rights that it needs in order to preserve the integrity of its

academic program. In these *specific* cases, the college or university and the creator(s) could sign a standard agreement that allocates (licenses) to the college or university the ability to exercise certain rights, without obtaining permission from the copyright owner:

- The right, on a limited, nonexclusive basis, of colleagues and students in the author's own department, on his or her own campus, or on campuses within a large university system to make reproductions of the work to use in teaching, scholarship, and research
- The right to control whether the institution's name or logo is displayed in association with the work
- The right to require an appropriate acknowledgment of institutional support of the creation of the work
- The right to borrow portions of the work for use in compilations or other composite works
- The right to reproduce the work for uses directly related to advancing the mission or maintaining the culture of the college or university
- The right to be informed in advance of any uses, reproductions, distributions, and dispositions of the copyrighted work by the author(s)
- The right to duplicate the work for teaching, scholarship, and research and, on a limited basis, the right to make derivative works if the author or authors assign copyright ownership to a third party[6]

Institutions should treat technology innovations as original contributions to the betterment of education and should be generous and forward-thinking by offering attractive incentives for such activities.

What Kind of Policy Do We Need?

The symposium participants agreed that all institutions need to have a framework for thinking through these issues and the implications of the electronic revolution for their institutions and faculty. Having a framework for discussion and decision-making is, however, quite different from writing elaborate policies. One of the questions the participants considered was whether or not every institution needs a policy, since it is unlikely that the vast majority of institutions will create course materials that make money. Most policies that are being written on campuses today are overly complicated because institutions are trying to anticipate all possible circumstances. Including a detailed division of royalties, for example, seems extreme considering the likelihood that a commercially viable product will even be produced.

Most policies that are being written on campuses today are overly complicated because institutions are trying to anticipate all possible circumstances. Including a detailed division of royalties, for example, seems extreme considering the likelihood that a commercially viable product will even be produced.

We recommend that the default policy position for all institutions should be that the faculty member owns the course materials he or she has created. Rather than trying to anticipate all the possible exceptions and include them in a policy, institutions may want to incorporate "trigger mechanisms" in the primary policy; these would define specific situations or conditions that would trigger the application of a second policy. As an example, if the course materials are commercialized by someone other than the college or university and actually make money, the institution could reserve the right to get a certain percentage of royalties to recover any investment it may have made. That percentage should be small, perhaps 5 percent.

Who commercializes the products—who markets and distributes them—is a critical issue. If the institution is in a position to take on these activities, or to negotiate with external entities on behalf of the faculty member to help in commercializing the products, the institution could also say that it has an office to perform these tasks. The stance toward the faculty member would be, "If you need the institution's help to do something or think that we can add value to the process, then come to us." This approach puts the institution in the position of figuring out ways to provide support to faculty and addressing the issue as one of process rather than one of intellectual property.

Notes

1. Lisa Guernsey and Jeffrey R. Young, "Who Owns On Line Courses?" *Chronicle of Higher Education,* June 5, 1998.

2. David F. Noble, "Digital Diploma Mills: The Automation of Higher Education," October 1997. http://www.firstmonday.dk/issues/issue31/noble/index.html

3. Perry M. Robinson, *Technology and Higher Education,* 1996-97 (Washington, D.C.: American Federation of Teachers, 1997).

4. This section draws heavily from Dan Burk's excellent exposition of the legal issues: Dan L. Burk, "Ownership of Electronic Course Materials in Higher Education," *CAUSE/EFFECT* 20, No. 3 (fall 1997): 13–18. http://www.educause.edu/ir/library/html/cem9734.html

5. Consortium for Educational Technology for University Systems (CETUS), "Ownership of New Works at the University: Unbundling of Rights and the Pursuit of Higher Learning," 1997. http://www.cetus.org/ownership.pdf

6. These recommendations are drawn directly from the CETUS report, ibid.

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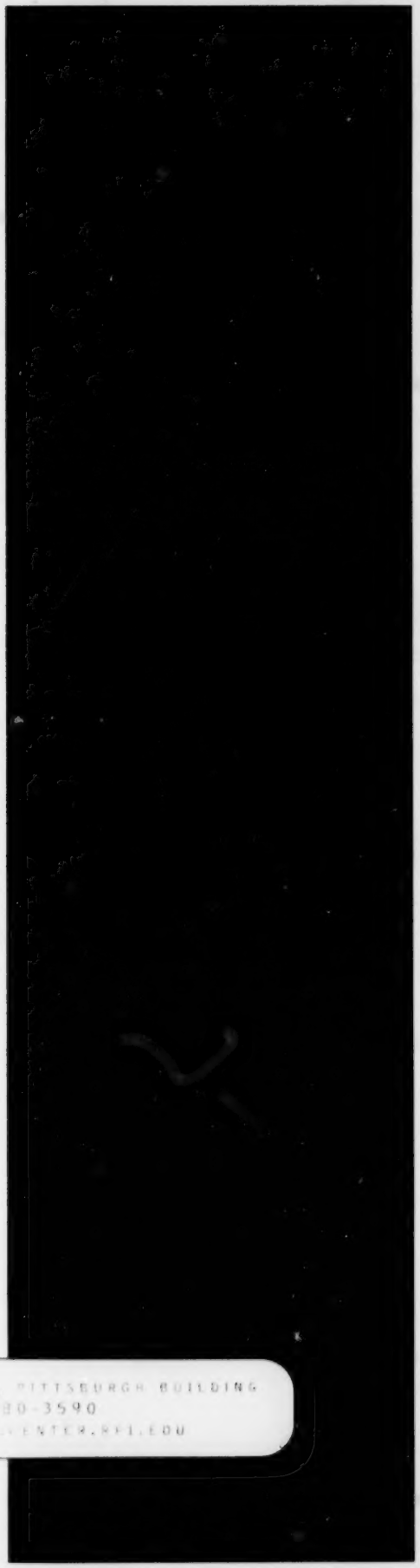

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